PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

November 7, 1883.—J. W. Hulke, Esq., F.R.S., President, in the Chair.

The following communications were read:—

1. "Notes on Brocchi's Collection of Subapennine Shells." By J. Gwyn Jeffreys, Esq., LL.D., F.R.S., F.G.S.

In this paper the author gave the results of an examination of the collection of fossil shells from the Subapennine Pliocene described by Brocchi in his 'Conchiologia fossile Subapennina,' and now preserved in the Museo Civico at Milan. He stated that the collection appeared to have been more or less tampered with, several species are unrepresented, and in other cases the specimens on the tablets with Brocchi's labels have evidently been subsequently and erroneously placed in their present situation. There are, however, many undoubted types. The author cited 55 of Brocchi's species, upon most of which the collection furnished more or less interesting information. In conclusion he remarked upon the importance of identifying Brocchi's species with forms still living in the neighbouring seas, and also upon the difficulty of distinguishing between the Upper, Middle, and Lower Pliocene in Italy. From his examination of Italian Pliocene shells he concluded that the deposits containing them were for the most part formed in comparatively shallow water, probably not more than 50 fathoms in depth, a remark which also applies to the Italian Miocene; and that in the case of species still existing no difference can be recognized between Pliocene and recent specimens.

2. "British Cretaceous Nuculidæ." By John Starkie Gardner, Esq., F.G.S.

The author commenced by discussing the question whether the Nuculidæ should be separated as a family from the Arcidæ, and stated that species of *Leda* and *Nucula* exist and sometimes abound in the marine Cretaceous deposits, with the exception of the White and the Red Chalk, from which, however, he thought that the shells may have been dissolved out. He also referred to the probable derivation of the species from preexisting forms, and discussed the question of how far the relationships thus established could be expressed in the nomenclature of the species, his researches upon the Nuculidæ leading him in some cases to suggest a trinomial nomenclature. The probable lines of descent of the shells described in the present paper were also discussed at some length.

In the genus *Nucula* the author distinguished certain groups typified by particular species, his trinomial system of nomenclature consisting in the intercalation of the names of the latter between the generic name and the definitive specific name of the individual

species. These groups, with their included species, were as follows :—

Group Ovatæ.

Ovatæ lævigatæ :—*Nucula ovata*, Mant., Gault; *N. obtusa*, Sow., Blackdown; *N. planata*, Desh., Neocomian; *N. capsaformis*, Mich., Gault.

Ovatæ reticulatæ: *N. Meijeri*, sp. n., Blackdown; *N. arduennensis*, Orb., *pumila*, var. nov., Gault.

Group Impressæ.

N. albensis, Orb., Gault; *N. impressa*, Sow., Blackdown; *N. Cornueliana*, Orb., Neocomian; *N. simplex*, Desh., Neocomian.

Group Angulatæ.

Angulatæ pectinatæ :—*N. pectinata*, Sow., Gault; *N. pectinata cretæ*, sp. n., Grey Chalk; *N. bivirgata*, Sow., Gault; *N. antiquata*, Sow., Blackdown.

Angulatæ lævigatæ :—*N. gaultina*, sp. n.

Of the genus *Leda* no formal grouping was proposed; ten British Cretaceous species were described. In conclusion, the author discussed the stratigraphical distribution of the species of the two genera.

Dr. Gwyn Jeffreys doubted the necessity of forming a separate family of Nuculidæ. He included them in the Arcidæ. He had examined the Gault collection of Mr. Gardner, which appeared to contain ten times as many species as had already been described from that formation. He considered that the Gault Nuculidæ lived at a depth of from 50 to 100 fathoms, and this view was confirmed by the nature of the materials forming the Gault clay.

Prof. T. Rupert Jones said that in many parts the Gault swarms with Microzoa, and these seemed to confirm Dr. Gwyn Jeffreys's view that the Gault was formed at a depth of about 100 fathoms.

The Author thought that the limited area covered by the true Gault clays and the presence of coniferous wood and fruits pointed to the conclusion that the Gault was an estuarine deposit. He believed the evidence indicated that the Gault was deposited in a gradually deepening sea.

MISCELLANEOUS.

On the Internal Sacculina, *a new Stage in the Development of* Sacculina Carcini. By M. Yves Delage.

When, in studying the embryogeny of *Sacculina*, one seeks on crabs for smaller and smaller individuals, one is soon struck by the